THE JOURNAL OF SCHOOL HEALTH

Vol. XXX No. 7

SEPTEMBER
1960

C. Morley Sellery, M.D.
1467 Oakhurst Drive
Los Angeles, Calif.

ANNUAL MEETING

AMERICAN SCHOOL HEALTH ASSOCIATION

OCTOBER 29 THROUGH NOVEMBER 3, 1960

SAN FRANCISCO HOTEL WHITCOMB

PUBLISHED BY

THE AMERICAN SCHOOL HEALTH ASSOCIATION

AMERICAN SCHOOL HEALTH ASSOCIATION

Organized 1927

Devoted to the interests and advancement of those engaged in school health activities and the service rendered by them

Officers of the American School Health Association
October, 1959 to October, 1960

President:
Lyda Smiley, R.N., M.A., LaMesa-Spring Valley School District
LaMesa, California

President-Elect:
Leland M. Corliss, M.D., Board of Education, Denver 2, Colorado

Vice President in Charge of Program:
J. Keogh Rash, H.S.D., University of Indiana, Bloomington, Indiana

Vice President in Charge of Membership:
Donald J. Ludwig, H.S.D., University of Indiana, Bloomington, Indiana

Executive Secretary:
A. O. DeWeese, M.D., 515 E. Main St., Kent, Ohio

Treasurer:
Warren Southworth, Dr. P. H., University of Wisconsin, Madison 6, Wisconsin

Editor:
Delbert Oberteuffer, Ph.D., Ohio State University, Columbus 10, Ohio

GOVERNING COUNCIL

Term Expiring 1960

Florine Thomason, R.N.,
Richmond, Virginia
Edward B. Johns, Ed.D.,
Los Angeles, Calif.
Abram Cohen, D.D.S.,
Philadelphia, Penna.
Austin E. Hill, M.D.,
Houston, Texas
G. Robert Koopman, A.M.,
Lansing, Michigan

Term Expiring 1961

Leo Feichtner, M.D.,
Albany, New York
Elsa Schneider, M.A.,
Washington, D.C.
Ross Gutman, D.D.S.,
Albany, New York
W. K. Streit, M.A.,
Cincinnati, Ohio
Dorothy Tipple, S.N.T.,
Albany, New York

Term Expiring 1962

Mildred Doster, M.D.,
Denver, Colorado
Perry Sandell, M.Ed.,
Chicago 11, Illinois
H. S. Hoyman, Ed.D.,
Urbana, Illinois
Helen Watson, R.N.,
Hartford, Connecticut
May Hare, M.A., Topeka, Kansas

By Special Vote of Governing Council

J. A. Myers, M.D.,
Minneapolis, Minnesota

Past Presidents, Ex-Officio

All active past presidents are voting members.

Affiliated Associations

American Association for Health, Physical Education and Recreation
William H. Creswell, Jr., Ed D.
New York State Dental Hygiene Teachers Association
Mrs. Mary Hutton, D.H.

Constituent Associations

Michigan School Health Association E. J. McClendon
California School Health Association
Ina Lundh
New Jersey State School Nurses Association, Evelyn Joyner, R.N.
New York Association of School Physicians, C. Adele Brown, M.D.
New York School Nurse-Teachers Association
Virginia Thayer, S.N.T.

TH
Vol.

The

High
Sa

Ciga

Expe
Te

Palo

A Ne

Rese

DEL

in an
the c

THE JOURNAL OF SCHOOL HEALTH
Vol. XXX SEPTEMBER, 1960 No. 7

CONTENTS

The President's Page 247
Fred V. Hein, Ph.D.

Highlights of the ASHA Annual Meeting Oct. 29-Nov. 3, 1960 San Francisco 248

Cigarette Smoking, Cigarette Advertising and Health 251
Roger S. Mitchell, M.D.

Experimenting With the Direct Teaching of Health Education by Television in the Columbus Public Schools 260
Joy Garrison Cauffman

Palo Alto's School Dental Health Program 268
E. Pearl Hannah, D.D.S.

A Need for Nutrition Knowledge 273
Dorothy Throssell and John Morrison

Research of Interest 279
Wesley M. Staton, Ed. D.

THE JOURNAL OF SCHOOL HEALTH
THE AMERICAN SCHOOL HEALTH ASSOCIATION
Published monthly, except July and August, at Columbus, Ohio

Editor
DELBERT OBERTEUFFER, Ph.D.
337 West Seventeenth Avenue
The Ohio State University
Columbus 10, Ohio

Assistant to the Editor
DONNA L. RAINEY

Executive Secretary
A. O. DeWEESE, M.D.
515 East Main Street
Kent, Ohio

SUBSCRIPTION RATES TO THE JOURNAL
Membership dues, $4.00 including Journal; Single copies 50c, send payment with order

No part of any article appearing in this issue may be used or reproduced in any manner whatsoever without written permission of the Editor—except in the case of brief quotations embodied in the article or review.

Second Class Postage Paid at Columbus, Ohio

Printed by THE SPAHR & GLENN COMPANY
50 East Broad Street Columbus 15, Ohio

REPRINTS

Reprints are available in lots of 100 or more and must be ordered within twenty (20) days after issue of the *Journal* in which the article appears. Prices are dependent on the length of the article, including space occupied by cuts and other illustrations.

No. of Pages	2	2–4	5–8	9–12
100 copies	16.46	25.66	43.99	58.65
Add'l. 100's	1.46	2.60	3.33	5.26

Address all inquiries concerning reprints to:

THE SPAHR & GLENN COMPANY
50 East Broad Street
Columbus 15, Ohio

★ ★ ★

CHANGE OF ADDRESS

Send your new address at least 4 weeks before the date on which it is to become effective, to

The Journal of School Health
515 East Main Street,
Kent, Ohio

Please send old address with the new, enclosing, if possible your address label. Addresses must include zone number.

★ ★ ★

MEMBERSHIP APPLICATION AND JOURNAL SUBSCRIPTION

American School Health Association

I, ..., hereby apply for membership in the American School Health Association and enclose $4.00 for annual membership dues, including a year's subscription to the Journal of School Health.

Date..... (Signed) .....

....
Official Position Address

.....

Date.....

Please fill out and send with check to A. O. DeWeese, M.D., Secretary and Treasurer, 515 East Main Street, Kent, Ohio.

Members of three years' standing are eligible for Fellowship—dues $8.00

THE JOURNAL OF SCHOOL HEALTH

Devoted to the interests and advancement of school health service and instruction. Your participation by membership is solicited.

Vol. XXX SEPTEMBER, 1960 No. 7

THE PRESIDENT'S PAGE

FRED V. HEIN, Ph.D.
Assistant Director, Department of Health Education
American Medical Association
President, American School Health Association 1957

Strategy for the Sixties

With the start of the new school year, membership in the American School Health Association has reached an all time high. According to recent reports from the office of the Executive Secretary, more than 7,000 members and fellows are now enrolled. Numerically, the Association has achieved the potential for great influence and leadership in the field of health.

In a way, ours is a diversified group made up as it is of physicians, dentists, nurses, educators and others. Nevertheless, all have a common concern in that our attention is centered upon the health of school age youth. There could be no stronger motivation to consolidate our interests and energies. Yet, it remains to be seen whether the progress we make in uniting our efforts can match our growth in membership.

As we enter the 1960's we are faced by many unsolved problems: Unhappily, health teaching, particularly in the secondary schools, remains a curricular stepchild in many places. Regrettably, the health services are often regarded as an adjunct rather than an essential aspect of the school program. Unfortunately, too, recognized principles of healthful school living are sometimes sacrificed to expanding and/or crowded schedules.

Recommended policies and practices for each of these areas have been carefully delineated. They have been set forth in reports of this Association and in joint statements that we have shared with others. They have been widely promulgated among the various disciplines involved in the school health program. Implementation is the job ahead and this demands redirection of our efforts.

Organizations with smaller memberships and less potential than ours have profoundly influenced the American health scene. Invariably such groups have had a membership willing to vigorously express and aggressively advance their cause. It is time for the American School Health Association to adopt the same forceful approaches in promoting its great cause—the health education of our children and youth.

Such promotion is not the responsibility of officers, council members, and committee participants alone; rather it is the shared obligation of each of us. This requires that we speak up strongly in every school and community for the ideals and principles basic to our cause. Thus we shall found a new profession—a profession of school health—and this should be our strategy for the Sixties.

1960 Highlights of Annual Meeting
American School Health Association
San Francisco, October 29—November 3

Saturday, October 29—California School Health Association
(ASHA members are invited)

9:00–12:00 A.M.—Registration—Hotel Whitcomb Lobby
9:15– 9:45 A.M.—Business Meeting
10:15–12:00 A.M.—Special Interest Groups
2:00– 4:00 P.M.—General Session—Crystal Room
6:30 P.M. —CSHA Banquet Honoring ASHA—Crystal Room

Sunday, October 30—Whitcomb Hotel Lobby
Registration—Whitcomb Hotel Lobby

9:00–12:00 A.M.—Open Committee Meetings—Whitcomb Hotel

2:00– 4:00 P.M.—First General Session—Vista Room, Whitcomb Hotel
Presiding—LYDA M. SMILEY, M.A.
"Health, Education, and Welfare of School Age Children"
(Joint Session with C.S.H.A.)
Health, ROBERT H. ALWAY, M.D.
Education, HELEN HEFFERNAN
Welfare, MARIE FIELDER, PH.D.
Reactor-Summarizer,
DELBERT OBERTEUFFER, PH.D.

4:00– 6:00 P.M.—Research Council Open Meeting—Toyan Hall, Whitcomb Hotel

8:00–10:00 P.M.—Second General Session—Carmel Hall, Whitcomb Hotel
Presiding—L. M. CORLISS, M.D.
1. "Report of Study Committees"—FRED V. HEIN, PH.D.
2. Special Address
"Implications of Behavioral Studies for Health Education"—RALPH W. TYLER, PH.D.

8:00–10:00 P.M.—First Governing Council Meeting—Headquarters Room

Monday, October 31

8:00–10:00 A.M.—Open Committee Meetings
Second Governing Council Meeting

2:15– 4:15 P.M.—First Joint Session—Larkin Hall, Civic Auditorium
"Mental Health Services in Schools"
(Mental Health and School Health Sections, APHA)

4:30– 6:00 P.M.—Open Committee Meetings
Third Governing Council Meeting

8:00–10:00 P.M.—Third General Session—Carmel Hall, Whitcomb Hotel
Presiding—DELBERT OBERTEUFFER, PH.D.
Business Meeting

"Teaching in Controversial Areas"
Textbook Content—MARGARET GREENSLADE, H.S.D.
San Diego Sex Education Program—
GAGE G. WETHERILL, M.D.
Content and Method—GILBERT M. SHIMMELL, ED.D.

Tuesday, November 1

4:30– 6:00 P.M.—Fourth Governing Council Meeting

Wednesday, November 2

9:15–11:15 A.M.—Second Joint Session—Larkin Hall, Civic Auditorium
"Guidelines to Dental Health Programs for Children"
(Dental Health, Maternal and Child Health, Public Health Nursing, and School Health Sections, A.P.H.A.)

2:15– 4:15 P.M.—Independent ASHA Session—Larkin Annex, Civic Auditorium
Presiding—L. M. CORLISS, M.D.
"The Implications of the White House Conference Recommendations for School Health"
Health Programs for School Children, DONALD A. DUKELOW, M.D.
Disabled Pupils and the New Decade, HARRIETT RANDALL, M.D.
Implementing Recommendations for Health Education in the School, EDWARD B. JOHNS, ED.D.
Child Health Influences of Various Community Institutions, MRS. ROLLIN BROWN

6:30–10:00 P.M.—Annual Banquet—Vista Room, Whitcomb Hotel
Presiding—LYDA M. SMILEY, M.A.
"Presentation of Howe Award"—
DELBERT OBERTEUFFER, PH.D.
"Response by Recipient"—
H. FREDERICK KILANDER, PH.D.
Address—JOHN D. PORTERFIELD, M.D., Deputy Surgeon General Public Health Service
Reception

Thursday, November 3

8:00–10:00 A.M.—Governing Council Organization Meeting

9:15–11:15 A.M.—Third Joint Session—Larkin Hall, Civic Auditorium
Presiding—WARREN H. SOUTHWORTH, DR. P.H.
"Adolescent Development and Problems"
Adolescent Guidance—ALICE P. BRESLOW, PH.D.
Teenage Concerns—ARTHUR ROTH, M.D.
Teenage Reactor Panel

2:15– 4:15 P.M.—Fourth Joint Session—Polk Hall, Civic Auditorium
"Communication Problems Between Disciplines in Public Health"
(Dental Health, Food and Nutrition, Public Health Education and School Health Sections, APHA)

SCHOOL NURSING COMMITTEE

Open Committee Meetings

Sunday, October 30

10:00–12:00 A.M.—

School Nursing Committee—Toyan Hall

Review of Committee Activities 1959–60

Report of Sub-Committees

Discussion of Sub-Committee Reports

Planning Future Committee Projects

Monday, October 31

8:00–10:00 A.M.—

Sub-Committees—Corinthian Room

4:30– 6:00 P.M.—

School Nursing Committee—Toyan Hall

ORGANIZATION OF STATE ASSOCIATIONS OF THE AMERICAN SCHOOL HEALTH ASSOCIATION

Miss Irma Fricke, R.N., Chairman of the National Committee on Constituent and Affiliated Organizations, is anxious to contact by mail members with ideas and interest in forming a state organization of the national organization.

She would also like to meet all those interested in the Headquarters room of the Association at the Whitcomb Hotel at the annual meeting in San Francisco on Sunday afternoon October 30 at 5:00.

HOW DOES HE MEASURE UP?

JUST A GLANCE at this new measuring tape will tell how he compares by height and weight with other children in his age group.*

IT'S SO CONVENIENT and easy for the school nurse to evaluate growth while measuring the child.

IT'S SIMPLE TO HANG. Just pull off the protective covering and press to apply to any surface. No nails or tape needed.

*This chart of weights and ages for each height is based on a study made of 4300 children from kindergarten through the eighth grade in 1959 in an average income midwestern suburb.

ORDER TODAY!

$1.50 | each
7.50 | for six
12.00 | for one doz.

(Shipped Postpaid)

Write for new complete catalog

SCHOOL HEALTH SUPPLY CO.

7426 Madison Street/Forest Park, Illinois

CIGARETTE SMOKING, CIGARETTE ADVERTISING AND HEALTH*

A Review

"She generally gave herself good advice (though she very seldom followed it) . . . ," from *Alice in Wonderland.*

ROGER S. MITCHELL, M.D.
Denver, Colorado

Introduction

Cigarette smoking has been accused of causing or aggravating numerous diseases, among them lung cancer, cardiovascular diseases, Buerger's disease, bronchitis, pulmonary emphysema, peptic ulcer and a rare form of blindness. Representatives of the tobacco industry, on the other hand, have insisted loudly and effectively that cigarette smoking is a harmless source of pleasure to millions and that no *cause and effect* relationship between smoking and any disease has as yet been demonstrated.

Meanwhile, the tobacco industry has apparently recovered from its temporary but alarming slump of 1953–54 caused by the first major lung cancer scare. This recovery was achieved largely *by adding filter tips to cigarettes.*

Filter-tip cigarettes now comprise over half of total cigarette sales, compared to 1.4 per cent in 1952; "king"-size cigarettes without filter tips now represent some 15 per cent, and regular cigarettes about 30 per cent of the total market.[1, 2] Aided by the most costly advertising program of any industry in the nation ($130 million in 1958), the tobacco companies have apparently succeeded in convincing the average American, first, that cigarettes are relatively harmless and, second, that if you are afraid of ordinary cigarettes, you can protect yourself with a filter tip.[3] Parenthetically, this campaign—much of it on television—has quite obviously been directed especially at the still unhabituated teenager. The advertising men have succeeded in equating cigarette smoking with personal pleasure, sophistication, social ease and respectability, enjoyment of and success in sports, and maturity.[3] Boys seem more masculine and now girls even more feminine if they smoke.

The advent and unprecedented rise in the use of filter-tip cigarettes make it logical, therefore, to ask the tobacco manufacturers why we need

---

*From The Colorado Foundation for Research in Tuberculosis and the Department of Medicine, University of Colorado School of Medicine, Denver, Colorado. Presented in part at the Annual Meeting, American School Health Association, October 19, 1959, Atlantic City, New Jersey.

to protect ourselves against something that is not harmful in the first place.

One answer to this question has come from a Congressional investigation. A Committee of the U. S. House of Representatives conducted hearings in July 1957 to determine whether the advertising of filter-tip cigarettes up to that time had been false or misleading. The conclusions of the special Sub-Committee (Congressman Blatnik, Chairman) of the Committee on Government Operations, after completion of these hearings, were as follows:[4]

"1. The cigarette manufacturers have deceived the American public through their advertising of filter-tip cigarettes. Ironically, while denying the alleged health hazards of cigarette smoking, the cigarette industry has, in its advertising, made these charges appear true. Without specifically claiming that the filter tip removes the agents alleged to contribute to heart disease or lung cancer, the advertising has emphasized such claims as 'clean smoking,' 'snowy white,' 'pure,' 'miracle tip,' '20,000 filter traps,' 'gives you more of what you changed to a filter for,' and other phrases implying health protection, when actually most filter cigarettes produce as much or more nicotine and tar as cigarettes without filters.

"2. The effectiveness of this deceptive advertising is evidenced by the rise in filter-cigarette sales from 1.4 per cent of total cigarette sales in 1952 to 40 per cent in 1957. The American public have paid premium prices of 2 to 6 cents per pack for filter cigarettes for 'protection' they did not receive.

"3. The Federal Trade Commission has failed in its statutory duty to 'prevent deceptive acts or practices' in filter-cigarette advertising. The activities of the Commission to prevent this deception were weak and tardy. As a result, the connection between filter-tip cigarettes and 'protection' has become deeply imbedded in the public mind.

"4. The Federal Trade Commission has failed to approach the problems of false and misleading advertising with vigor and diligence. The members of the Commission should therefore immediately critically study the organizational structure of the Commission, its procedures and its personnel, and take such action as will insure that the Commission will be able to promptly and effectively prevent deceptive practices and misleading advertising."

A recent survey has indicated that most people who have switched to filter-tip cigarettes have done so for health reasons.[5]† Can we rely upon our Government to correct this situation? Must we conclude that the tobacco industry and its representatives are ruthless and/or dishonest, or are they honestly misinformed? Or is cigarette smoking really quite harmless? What are the facts available in 1960 behind this continuing controversy?

Tobacco and Health Facts

The *health* facts concerned with our *only* socially acceptable habituation‡ may be divided into those that are *a*) *well established* (in the minds

†The gyrations in the tar and nicotine content (determined only once annually in this series) of one brand of filter-tip cigarettes (Kent) provide a case in point:[5]

	1954	*1955*	*1956*	*1957*	*1958*
Tar (mgs)	19	27	23	36	22
Nicotine (mgs)	1.0	2.0	1.6	2.7	0.9

The original Kent was a business failure: the filter was too effective. In the last two years, on the other hand, Kent has enjoyed a phenomenal rise in popularity, probably traceable to "reengineering" (stronger tobacco and/or a looser, less effective filter) of the product of 1957 plus some public desire for protection.

‡Many observers would label the habit an addiction; drinking alcoholic beverages is socially acceptable in a more limited sense.

of the vast majority of competent and qualified observers) and those that are *b*) less well established but *strongly suspected*.

A. *Well established tobacco vs. health facts*§

1. Life expectancy in general is shorter by several years in habitual cigarette smokers than in habitual non-smokers.[9, 10, 11]

§Beginning with the lung cancer scare in 1952–53, numerous, quite legitimate objections have been raised to the findings linking cigarette smoking with ill health.[6, 7, 8, 9] These objections have been answered as follows:

The original observations were based upon *retrospective* studies; the smoking habits of persons with lung cancer were compared with those of a randomly selected group without lung cancer. Some 19 such studies from seven different countries have now all yielded essentially the same statistical relationships.[4] The objections to retrospective studies have now been met by three major prospective studies of the question.[10, 11, 12] In these, the smoking habits of large population groups were predetermined; time was allowed to pass and the mortality from lung cancer and other diseases was then correlated with smoking habits. These three studies have tended to show an even closer relationship between smoking and health than the statistically less sound retrospective studies had shown.

The relative infrequency of lung cancer in *women* has now been found to be associated with much less smoking by women.[13, 14, 15]

More people are now living into the cancer age because of antibiotics and many other life-lengthening discoveries. The unparalleled rise in the frequency of lung cancer in the past 60 years[16] has been attributed to this *aging population*.[8, 9] This opinion, however, has been disproven by age specific lung cancer death rates which show the rising incidence in lung cancer to be true for *all* ages.[12] In addition, the rise in lung cancer frequency is not matched by cancer of any other organ.

Increasing *awareness* of the disease and *improved methods of detection* were believed to explain some if not all the rise in lung cancer. This opinion has been offset by 1) a survey in Denmark where no new techniques were introduced in the study of a certain population for over 10 years; in spite of this, the rise in lung cancer in this group paralleled that observed elsewhere;[17] and 2) when statistical studies utilize only the cases diagnosed by means of tissue examination (and excluded the diagnoses made solely on less certain clinical grounds) the relationships to smoking and degree of smoking remained unaltered.[12]

A bias in the selection of persons in either retrospective or prospective studies might well impair the studies' validity.[7, 8, 9] For instance, during the first year after stopping smoking, persons had a *higher* mortality from all causes than persons who continued to smoke; this is regarded as reflecting the fact that persons who are ill tend to stop smoking voluntarily or on the advice of their physician.[12] It has also been impressive that the incidence of lung cancer has shown a tendency to rise rather than to fall with the passage of time in persons enrolled in the prospective studies: this reflects the intention of the planners to select overtly healthy persons for these studies. In view of all the evidence, the factor of bias in selection of persons for study cannot now be regarded as interfering seriously with the findings of these studies.

It has been proposed that a *constitutional defect* of some sort may cause both lung cancer and the desire to smoke or to smoke heavily.[7, 8] This hypothesis is supported to some extent by the finding of some basic personality differences between habitual non-smokers and heavy smokers.[18, 19] This hypothesis, however, will not explain the improvement in risk observed in those who give up smoking, nor will it explain the influence upon incidence of squamous cell cancer but not on adenocarcinoma.

Cigarette smoking is also associated with excess deaths from cancers of some *other organs* than the lung (e.g., liver, gall bladder, genito-urinary system).[12] This additional fact can hardly throw serious doubt on the lung cancer data, which it is purported to do.

The failure to demonstrate carcinogenic agents in tobacco smoke or tar has now been overcome.[4, 20, 21, 22, 23] The failure to produce cancer by painting the skin or *bronchi* of experimental animals with these substances has also been overcome.[4, 22] Progressive changes in human bronchial epithelium in the — (*Continued on next page*)

2. The most common cause of death observed significantly more frequently in cigarette smokers than in non-smokers is the large group of cardiovascular (especially coronary thrombosis) disorders.[9, 10, 11] Persons who smoke 10–20 cigarettes per day had a 29 per cent increased risk of death from coronary thrombosis; the risk in the two-pack-per-day-or-more man rose to 141 per cent more than in the non-smoker.[11] In ancillary support of this association, elevation of serum cholesterol has recently been shown to have some relationship to cigarette smoking.[27]

3. Another common group of diseases showing a clear cut statistical association with smoking is the group of chronic lung diseases labelled "Chronic bronchitis" in Great Britain and "emphysema" in the United States.[9, 28] Furthermore, heavy smokers tend to have reduced ventilatory capacity and enlarged lungs in comparison with non-smokers.

4. While cardiovascular diseases cause the greatest *excess number* of deaths, the difference in *incidence* of deaths between cigarette smokers and non-smokers, and the relationship of the degree (type, frequently and duration) of smoking to mortality are more impressive for lung cancer than for any other disease.[10, 11, 12]

5. Lung cancer is at least 95 per cent fatal, a case fatality rate far higher than that observed in either the cardiovascular or chronic obstructive airway diseases.[26]

6. The frequency of lung cancer has shown a remarkable rise throughout the world in the past 60 years; this has been especially true in Great Britain where lung cancer deaths have increased eight-fold in 20 years.[10] This rise has closely paralleled a dramatic change in the world's smoking habits; in the U. S., for instance, the change has been from almost no cigarette consumption in 1890 to over 10 cigarettes per person of 15 years of age or more per day by 1954.#[14, 15] In Great Britain in the 50 years since 1906, men increased their average total consumption of tobacco from 1.9 to 8 pounds per person per year while women increased their consumption of cigarettes from almost none to 3.1 pounds per year.[10]

7. The frequency of lung cancer rises steeply as the individual use of cigarettes increases; the rise is from roughly one chance of lung cancer in 275 for habitual non-smokers to one chance in 10 for habitual heavy (40 cigarettes or more per day) smokers.[12] Viewed somewhat differently, the average regular cigarette smoker has a nine-fold greater risk of lung cancer than the *habitaul non-smoker*; the risk for the two-pack-or-more-per-day individual rises to 60 times that of the non-smoker.[10, 11, 12]

8. The risk of lung cancer falls considerably after cigarette smoking

---

(§*Continued from page 253*) — direction of carcinomatous degeneration have been closely related to cigarette smoking.[23] The inability to produce lung cancer by forcing animals to inhale smoke does not appear to justify questioning a causal relationship; in the first place, animals cannot be forced to inhale deeply like human beings; in addition, we have reason to believe that more than one factor is at play in the causation of lung cancer.

The importance of *other carcinogenic factors*, both constitutional and environmental,[24, 25] has never been denied by researchers in this field. The existence of *co*carcinogens, or the necessity of two or more factors to produce the disease, would tend to explain, at least in part, why 9 out of 10 smokers of 40 or more cigarettes per day still do *not* acquire lung cancer.

#In 1958 in the U. S. the per capita (15 years of age and older) consumption of tobacco was 9.46 lbs. per year. The total consumption is up 20% in the past 5 years, during which time the population rose only 11%.

has been stopped for more than one year; the *drop* is greater the longer the abstinence from smoking and the heavier the former use of cigarettes.[12]

9. The incidence of the relatively less frequent (adenocarcinoma) type of lung cancer is apparently not related to cigarette smoking; the effect is almost entirely on the frequency of the squamous cell or undifferentiated type.

10. Pipe and cigar smoking have only a slight statistical relationship to lung cancer; they do, however, appear to increase the risk of cancer of the lip, tongue, tonsil and larynx.[10, 11, 12]

11. Ever since the introduction of tobacco smoking, *women* have been less apt to smoke than men: e.g., 73 per cent of men vs. 33 per cent of women were smokers in the age group 50–59 by a recent U. S. Public Health Service survey.[14, 15] Rural women, and especially women resident on farms, have been especially slow to adopt the habit. When they do smoke, women tend to smoke less than men; they also tend to reduce or abandon smoking earlier in life than men. The frequency of lung cancer is much lower in women than in men; in Great Britain recently, for instance, lung cancer caused 1 of 103 deaths in women vs. 1 of 18 deaths in men.[10] It should be stressed, however, that women who have smoked heavily for many years have been found to have lung cancer almost as frequently as men who smoke equally heavily.

B. *Less well documented observations regarding tobacco and health*

1. Habitual cigarette smokers appear to be different people in general than habitual non-smokers. The smokers consume more alcohol and more black coffee, change jobs and wives more often, engage in more athletics and are more apt to have had at least one parent with hypertension or coronary heart disease than those who do not smoke cigarettes. They also appear to be more energetic, more restless, more apt to seek dangerous assignments in war, more independent, and less well integrated than do habitual non-smokers.[18, 19]

2. Smoking habits may be related to (genetic) constitution; thus, identical twins tend to resemble each other in smoking habits despite different environments, while non-identical twins tend to have different smoking habits.[29]

3. It has not been claimed that cigarette smoking is the only cause of lung cancer. Community air pollution is one of a number of other probable causative factors; various carcinogenic substances have been isolated from industrial, mining and automotive sources (e.g., chromates, asbestos, nickel, tar fumes, radioactive gases and dusts and arsenic). The higher incidence of lung cancer and chronic lung diseases in urban than in rural populations is best explained in the light of our present knowledge by community air pollution. The higher incidence of these diseases in Great Britain than in the U. S. is also probably due to a special and severe type of community air pollution traceable to their widespread household burning of soft coal.

4. Several substances, capable of causing cancer when applied to the skin or bronchi of experimental animals, have been isolated from cigarette smoke. These include benzo(e)pyrene, benzo(a)pyrene, dibenz(a,h) anthracene, chrysene and 3,4 benzfluorantheen. The formation and concentration of these substances is dependent upon "pyrolysis"

or combustion at a high (above 600 C) temperature. They may arise not only from the tobacco but also from the paper. Their formation can be inhibited by slower or cooler burning. Slower burning can be promoted in several ways, including venting or placing holes in the sides of a cigarette or by using porous paper in order to slow down or interfere with the draw, or by the incorporation of an additive (such as ammonium sulfamate) which has a comparable effect on both paper and tobacco.[4, 5]

5. The *taste* of cigarette smoke is apparently directly related to its *tar* content (including the carcinogens listed above); when the burning heat is cooler and the tar content is thus lower, the taste is less satisfying than when the tar content is higher.[4]

6. The *pleasure* of cigarette smoking is believed to be related to a) taste (or tar content), b) nicotine (which causes an increase in pulse rate, an increased flow of saliva and other autonomic effects, and the constriction of arterioles) content and c) the psychological effect of doing something with the hands. The *habituation* of cigarette smoking is probably dependent upon all of these factors of smoking.[4]

7. Cigar and pipe smoking are probably potentially harmful but appear less harmful than cigarettes in statistical analyses because of the infrequency with which cigar or pipe smoke is deeply inhaled.‖

The Tobacco Industry

The following facts about the *tobacco industry, cigarette manufacture* and *cigarette advertising* are well established.

1. The annual U. S. Tobacco crop comes from some 700,000 different farms served by about 3,000,000 farm workers.

2. The product of their labors was worth about $1.2 billion in 1956; among farm products, tobacco is near the top in value, but near the bottom in total acreage.

3. The retail value of manufactured tobacco products was just over $5.6 billion in 1956; cigarettes comprised 80% of the product; cigars, pipe tobacco, chewing tobacco and snuff made up the remainder. Some 500,000 persons are employed in the manufacturing process; about 1.3 million are employed in retail outlets.

4. Direct Federal taxes on tobacco products amounted to $2.2 billion in 1956, and indirect Federal taxes were estimated at $500 million: some 8 cents on each pack of cigarettes. These, plus State real estate taxes on tobacco acreage, make the industry a huge source of Federal and State support by tax income.

5. The cigarette industry has undergone a major upheaval as a result of three recent innovations: a) the filter tip, b) the extra long or "king" size and c) "homogenization." Filters are usually made of cellulose acetate, often with other substances added. Tightly packed, such filters can be efficient in removing a large proportion of both tars and nicotine

‖The importance of *inhaling* cigarette smoke has not been adequately studied. It appears reasonable, although it is as yet unproven, that those who inhale tobacco smoke deeply and frequently—whether it be cigarette, cigar or pipe smoke—are exposed most heavily to tobacco tars. Cigar and pipe smokers are much less prone to inhale than cigarette smokers since their smoke is not so easily tolerated as cigarette smoke. This fact may explain the striking differences in health hazard between cigarette, cigar and pipe smoking.

(along with smoke). As their efficiency rises, ease of draw, "taste" and satisfaction are reduced. A filter which stops all tars and nicotine permits the passage mostly of hot moist air. To compensate for loss of satisfaction (and the resultant drop in cigarette sales) and still meet the public demand for protection, filters have been loosened or otherwise altered to let more tars and nicotine through. In addition, strong, harsh grades of tobacco have been substituted "up front." The resultant filter-tip cigarettes may therefore contain as much tars and nicotine as (and even more than) regular cigarettes. Satisfaction and sales are both promoted while satisfying the public desire for health protection.

6. Tobacco growers and wholesalers were originally thrown into a state of confusion by the huge increase in demand for the harsh, formerly cheap tobaccos which contain more tars and nicotine than the milder grades formerly used to make most American cigarettes. The so-called "high-grade" mild tobacco meanwhile accumulated in tobacco warehouses in disturbing quantities.

7. Tobacco stems and scraps which were formerly discarded as unusable are now ground up, mixed with a binding substance and rolled into sheets. This process, called "homogenization," has also tended to reduce the demand for tobacco leaf. Whether this innovation has had any effect upon tar or nicotine content or health is not yet known.

8. Tobacco costs more than filters do. In addition, the amount of tobacco rolled into a cigarette can be reduced by loose packing; this will in turn accelerate the heat of burning and thus tend to increase the tar content and flavor of the smoke. Filter-tip cigarettes therefore usually contain less tobacco than regular cigarettes. In short, the premium price of 2–6 cents per pack which is paid for filter cigarettes is usually not justified by the cost of their raw materials.

Discussion

What can be done to meet this situation?

Several national governments (e.g., Great Britain, Netherlands, Sweden) have taken a public stand on the dangers of cigarette smoking. The Surgeon General of the U. S. Public Health Service took the official position in July 1957 that cigarette smoking has been proven to be harmful to health. This stand was reiterated and reinforced in the fall of 1959.[31] Other agencies of our Government (e.g., Federal Trade Commission,© Food and Drug Commission) have so far taken no drastic action. Several official and civilian agencies in Great Britain, on the other hand, have set out to try to educate the public about the hazards of cigarette smoking. In the United States, the American Cancer Society and more recently, the National Tuberculosis Association have taken strong public stands on the subject and are both currently endeavoring to attack the problem through a campaign of education, especially of high school age young people.

The advertising industry itself has recognized it has a problem:

"There can no longer be any doubt about it. The advertising business is

©The Federal Trade Commission sought an injunction against Liggett and Myers in January 1953 for advertising that "nose, throat and accessory organs are not adversely affected by Chesterfields;" by the time the courts had approved the injunction in September 1958, Liggett and Myers had long since voluntarily changed their advertising approach.[5]

headed for trouble . . . The cigarette business, in particular, which caused so much trouble for all advertising twenty years ago, again is in the forefront of offenders against believability and credibility . . ."[5]

Efforts to control a disease need not necessarily wait until all the cause and effect facts are known. Based upon the *statistical* relationships observed, cholera, small pox, malaria, plague, pellagra and yellow fever were all successfully attacked before the whole story of their causes had been discovered. In other words and for example, when the cholera in London was found to occur mostly in those who drank from a certain well, others were prevented from contracting cholera by closing the well; and this took place before the cause of cholera was known, before any knowledge of bacteria existed.

Conclusions

1. Cigarette smoking may now be reliably regarded as harmful to the health of man. It has been especially shown to be *one* of the causes of lung cancer. It probably plays a major role in causing or aggravating chronic bronchitis and other chronic lung diseases characterized by increasing breathlessness on exertion. The relationship of smoking to diseases of the heart, blood vessels and other organs is less clearly documented.

2. The harmful effects of cigarette smoking so far can be avoided only by not smoking cigarettes. Filtering the cigarette smoke has not as yet been found to provide in practice the protection that filtering implies.

3. The tobacco industry should be encouraged to continue its efforts to find any links between cigarette smoking and health and then try to remove the cause of harmful effects if possible. At present, it appears that the tobacco advertisers, on the other hand, appear to be more interested in encouraging people to smoke and in trying to prove that no link exists.¶

4. All people, especially young people who are not yet habituated to smoking, are entitled to know the truth about the potential harmful effects of cigarette smoking.

5. Individual physicians, local medical societies and national medical societies, especially the American Medical Association, should now take a public stand on this important question.

BIBLIOGRAPHY

1. Wooten, H. M. Cigarette Sales in 1958. Tobacco Men Do 5% Better. Printers Ink, Dec. 26, 1958.
2. O'Donnell, L. G. Cigarettes Fight Back. Wall Street Journal, July 22, 1959.
3. Godden, J. O. The Physician Looks at Cigarette Advertising. Phi Chi Quarterly, Jan. 1959.

¶A few exceptions to this general role are noted. Porous cigarette paper is a legitimate step toward reducing the tar content by promoting cooler burning of the tobacco. "Vanguard" cigarettes are said to be made solely out of vegetable fibres other than tobacco; smoke from these cigarettes may (or may not) prove to contain less carcinogenic tars than cigarettes made of tobacco. Rothmans Ltd. of London, tobacco manufacturers, recommend smoking in moderation (reminiscent of our liquor industry), smoking slower and leaving a longer butt, all steps directed toward a reduced net intake of tars and nicotine. On the other hand, a spurious effort to make cigarettes more "healthful" is the current return to mentholated (or pseudo-medicated) brands.

4. Hearings before a Subcommittee of Committee on Government Operations, House of Representatives, 85th Congress, First Session, False and Misleading Advertising (Filter-Tip Cigarettes), July 1957, 795 pp.
5. Anonymous. A Two-Part Report on Cigarettes. Consumers Reports 23: 628–636, 1958.
6. Heller, J. R. The Truth about Smoking and Cancer. What is Known and Unknown. U. S. News & World Report, July 26, 1957.
7. Berkson, J. The Statistical Study of Association Between Smoking and Lung Cancer. Proc. Staff Meetings Mayo Clinic 30: 319–348, 1955.
8. Berkson, J. Smoking and Lung Cancer with Some Observations on Two Recent Reports. J. Am. Stat. Assn. 53: 28–38, 1958.
9. Rigdon, R. H. Consideration of the Relationship of Smoking to Lung Cancer. Southern Med. J., 50: 528–532, 1957.
10. Doll, R., and Hill, A. B. Lung Cancer and Other Causes of Death in Relation to Smoking. A Second Report on the Mortality of British Doctors. Brit. M. J., 2: 1071–1081, 1956.
11. Dorn, H. F. Tobacco Consumption and Mortality from Cancer and Other Diseases, presented before 7th Int'l. Cancer Congress, London, July 8, 1958.
12. Hammond, E. C., and Horn, D. Smoking and Death Rates—Report on 44 Months of Follow-up of 187,783 Men. J.A.M.A., 166: 1159–1172, 1958.
13. Haenszel, W., Shimkin, M. B., and Mantel, N. A Retrospective Study of Lung Cancer in Women. J. Nat. Cancer Inst., 21: 825–842, 1958.
14. Haenszel, W., and Shimkin, M. B. Smoking Patterns and Epidemiology of Lung Cancer in the United States. Are They Compatible? J. Nat. Cancer Inst., 16: 1417–1441, 1956.
15. Haenszel, W., Shimkin, M. B., and Miller, H. P. Tobacco Smoking Patterns in the United States. Public Health Monographs #45, 1956.
16. Dorn, H. F., and Cutler, S. J. Morbidity from Cancer in the United States. Public Health Monographs #56, 1959.
17. Clemmesen, J., Nielson, A., and Jensen, E. Mortality and Incidence of Cancer of the Lung in Denmark and Some Other Countries. Acta Unio internat. contra Cancrum, 9: 603–635, 1953.
18. Lilienfeld, A. M. Emotional and Other Selected Characteristics of Cigarette Smokers and Non-smokers as Related to Epidemiological Studies of Lung Cancer and Other Diseases. J. Nat. Cancer Inst., 22: 259–282, 1959.
19. Heath, C. W. Differences Between Smokers and Non-smokers. Arch. Int. Med., 101: 377–388, 1958.
20. Cornfield, J., Haenszel, W., Hammond, E. C., Lilienfeld, A. M., Shimkin, M. B., and Wynder, E. L. Smoking and Lung Cancer. Recent Evidence and a Discussion of Some Questions. J. Nat. Cancer Inst., 22: 173–203, 1959.
21. Wynder, E. L. Towards a Solution of the Tobacco-Cancer Problem. Brit. Med. J., 1: 1–4, 1957.
22. Rockey, E. E., Kuschner, M., Kosak, A. I., and Mayer, E. The Effect of Tobacco Tar on the Bronchial Mucosa of Dogs. Cancer, 2: 466–472, 1958.
23. Auerbach, O., Gere, J. B., Forman, J. B., Petrick, T. G., Smolin, H. J., Muehsam, G. E., Kassouny, D. Y., and Stout, A. P. Changes in the Bronchial Epithelium in Relation to Smoking and Cancer of the Lung: A Report of Progress. New England J. Med., 256: 97–104, 1957.
24. Hueper, W. C. A Quest into the Environmental Causes of Cancer of the Lung. Public Health Monographs #36, 1956.
25. Stocks, P. Cancer and Bronchitis Mortality in Relation to Atmospheric Deposit and Smoke. Brit. M. J., 1: 74–79, 1959.
26. Emerson, G. L., Emerson, M. S., and Sherwood, C. E. The Natural History of Carcinoma of the Lung. J. Thor. Surg., 37: 291–304, 1959.
27. Karvonen, M., Orma, E., Keep, A., Fidauza, F., and Brozek, J. Cigarette Smoking, Serum Cholesterol, Blood Pressure and Body Fatness. Lancet, 1: 492–494, 1959.
28. Higgins, I. T. T. Tobacco Smoking, Respiratory Symptoms and Ventilatory Capacity. Studies in Random Samples of the Population. Brit. M. J., 1: 325–329, 1959.
29. Fisher, R. A. Lung Cancer and Cigarettes? Nature, 182: 108, 1958.
30. Blair, W. M. Huge Tobacco Industry Again on Defensive. New York Times, July 21, 1957.
31. Burney, L. E. Smoking and Lung Cancer. J.A.M.A., 171: 1829–1837, 1959.

EXPERIMENTING WITH THE DIRECT TEACHING OF HEALTH EDUCATION BY TELEVISION IN THE COLUMBUS PUBLIC SCHOOLS

JOY GARRISON CAUFFMAN
Health Education Unit, University of California, Los Angeles

Initiation of the Health Science Television Experiment

In June of 1958 the Columbus Board of Education officially approved of an experimental program of instruction in health science via television. The major purpose of this experiment was to improve the quality of the instruction in the health science course and to determine appropriate television class sizes. Plans called for the direct teaching of a daily twenty-minute health science lesson by a studio teacher and for supplementary classroom instruction by receiving teachers.

WOSU–TV agreed to make arrangements to finance the studio and the production costs for this experiment and to provide consultant service, teaching aids, and telecasting facilities for the broadcasts. The Columbus Public Schools agreed to provide the television teacher and to supervise the preparation of the lessons.[1]

At the beginning of the experiment, seven television classes one each from seven junior high schools were selected on a voluntary basis to participate in the experiment. Each day the lesson was telecast to these seven classes from 9:00 to 9:20 a.m. and occupied approximately half of a regular class period. Four-hundred seventy-five eighth grade pupils were enrolled in the television classes which ranged in size from 57 to 100 pupils. In three of the larger television classes two receiving teachers shared the classroom responsibility.

Several different types of facilities were used for the television classes. These facilities included two regular classrooms, one large study hall, a small auditorium, two cafeterias, and a combination auditorium-gymnasium.

The studio teacher was selected on the basis of personal qualifications, scholarship, interest in health science, ability as a classroom teacher, and professional recommendations. He was given an eight-week special assignment during the summer of 1958 to work with the curriculum coordinator and studio consultants in the initial preparations for the telecasts.

Roles of Staff Personnel Involved in the Health Science Television Experiment

The members of the telecast team, which included personnel from WOSU–TV and the Columbus Public Schools, worked together to produce 150 health science lessons during the 1958–1959 school year. The WOSU–TV personnel involved in planning the health science program were for the most part the same highly skilled individuals who were responsible for executing all other live productions originating at the station, including a television director, camera men, a floor manager, a

[1]These plans are stated in the Board of Education, Columbus City School District, *Minutes of the Board of Education of the Columbus City School District*, June 17, 1959, p. 7.

projectionist, a video operator and switcher, audio men, a transmitter engineer, artists and a curriculum consultant. On the other hand, staff members from the Columbus Public Schools involved in planning the health science television programs were in positions which for them called for a new-type assignment. Specific details giving the titles and roles of staff members from the Columbus Public Schools can be studied in Table I which follows.

TABLE 1. COLUMBUS PUBLIC SCHOOL HEALTH SCIENCE TELEVISION STAFF MEMBERS

Titles	Roles
Curriculum Coordinator	Supervises the preparation of the content material for the television lessons. Initiates in-service education activities related to the health science television experiment.
Studio Teacher	Prepares and presents the television lessons. Participates in in-service education activities related to the experiment.
Classroom Receiving Teachers	Plan the pre- and post-television presentations in the classroom. Participates in in-service education activities related to the experiment.
Science Resource Teacher	Organizes the materials and the equipment for special health science demonstrations and experiments.
Audio-Visual Coordinators	Assist in securing and clearing audio-visual materials for use on the television lessons.
School Physician	Serves as a consultant on medical aspects related to the content of the health science lessons.

Preliminary Steps Followed in Planning the Health Science Telecasts

In planning the telecasts, the first step was the arrangement of a meeting for scheduling purposes. At this meeting the television director from WOSU–TV and the curriculum coordinator and the studio teacher from the Columbus Public Schools began the planning by studying the school calendar for the coming school year. Immediately, opening and closing dates of school, designated holidays, and studio conflicts were marked on the calendar. Then, a kinescoping schedule was established, since over one hundred of the lessons had to be kinescoped because a production crew was not available at the broadcasting time. After kinescoping dates and times had been set, the planning committee tentatively arranged a broadcasting schedule. About two weeks prior to the broadcast the schools and the newspapers were informed of the broadcasting schedule.

The second preliminary step was the determination by the curriculum coordinator and the studio teacher from the Columbus Public Schools and the studio artists from WOSU–TV of the types of art work to be prepared, the due dates for submitting art work, and the form for special art requests. The art department asked that all art requests be submitted at least one week in advance of the date on which the program was to be kinescoped.

The third preliminary step was less mechanical in nature and consumed considerably more time than any of the preceding steps. The curriculum coordinator, the studio teacher, and the science resource teacher from the Columbus Public Schools determined the units of study to be presented in the health science course and determined the number of days required to teach each unit. Fortunately, these curriculum planners had at their finger tips two very timely publications; an agreements chart which stated the basic pupil objectives of the health science course, and a newly developed curriculum guide for health science teachers.[2] Both of these publications had been developed cooperatively by teachers and administrators and both stated what should be taught in the health science course. A careful study of these materials helped the committee to select units of study and to determine the length of each unit. Table II lists the names of the units of study and the number of lessons planned for each unit.

TABLE II. HEALTH SCIENCE TELEVISION UNITS OF STUDY

Unit Number	Name of Unit of Study	Length of Unit (in days)
	Introduction to the Course	1
I	Appraising My Health	7
II	Seeing and Hearing	19
III	Keeping Healthy and Efficient (nutrition, recreation, rest, and sleep)	20
IV	Making a Good Impression (skin, hands and fingernails, hair, teeth, voice, posture, and clothes)	17
V	Living with Others (making friends, boy-girl relationships, family living, relations with older people, and group relations)	15
VI	Growing Up Physically (understanding normal human growth and reproduction)	13
VII	Growing Up Mentally and Emotionally (behavior as an indication of emotional growth, the physiology of emotions)	6
VIII	Diseases and My Health (causes of diseases, transmission and recovery, control and prevention)	15
IX	Safe and Effective Living (safety at school, at home, and in the community; emergency care and first aid; care of the sick; facing disasters)	19
X	Coping With Habit-Forming Substances (tobacco, alcohol, and narcotics)	9
XI	Columbus, a Healthy City (provisions for community health, the role of state and federal government in community health)	8
XII	Careers in Health Science	1
		150

[2]W. W. Miller and Others, *Junior High School Agreements Chart*, Columbus Public Schools, 1959; and Joy Garrison and Others, "Health Science." Unpublished Curriculum Guide. Columbus Public Schools, 1957.

As indicated by Table II, only 150 television lessons were planned. The original plan was to present a daily health science lesson on television but in reality some days were not scheduled because it seemed more logical to handle certain related learning activities in the classroom without the aid of television.

After the specific units had been determined and a given number of days were set aside for each unit, the fourth preliminary step, the division of the units into program segments, was undertaken. For example, in the unit, "Keeping Healthy and Efficient," one lesson was identified by the heading, "Taking Foods Apart," while another lesson in the same unit was entitled, "Eating a Square Lunch."

Although definite decisions and preliminary plans were made early in this experimental project, all preliminary plans were subject to change if and when change seemed justified.

Developing the Television Lesson

Established Guidelines

A number of basic guidelines had to be agreed upon in developing each television lesson. A list of these guidelines, accompanied by a brief description, will help to identify more clearly the nature of the 150 television lessons:

1. *The Development of objectives.* The objectives for the course had been stated on the Agreements Chart, and suggested unit objectives had been stated in the "Health Science Guide" in terms of knowledge, attitudes, and behavior (habits and skills). In several units it was necessary for the studio teacher to restate unit objectives in a language understandable to the pupil. Specific lesson objectives were determined as each lesson was developed and were made compatible with the broader course and broader unit objectives.

2. *Consideration of the role of the receiving teacher in planning each daily lesson.* On the first television lesson, pupils were told of the important role that their receiving or classroom teacher would play in helping them to enjoy and understand each lesson. During the experiment many in-service activities, such as workshops, conferences, institutes, and study group sessions were sponsored by the Columbus Public Schools, and at all of these functions the key role that the receiving teacher played in effectively planning pre- and post-television activities was emphasized. Outlines of each telecast, entitled "A Study Guide for the Health Science Television Series," were given to the receiving teachers in advance so that they could see the television lesson in relation to their plans for the total class period.[3] Also, during the year each receiving teacher received many useful printed and graphic materials for pupil assignments and for personal use. As soon as the television series was well under way, the receiving teachers were given an opportunity to help the curriculum coordinator, the studio teacher, and the science resource teacher in planning lesson content.

3. *The use of multiple printed and graphic materials for pupil assign-*

[3]Mary Baker, Joy Cauffman, and Carroll Smith, "A Study Guide for the Health Science Television Series." Unpublished Curriculum Guide, Columbus Public Schools, 1958–1959.

ments and for teacher references. Three basic textbooks, two supplementary texts, and numerous booklets, leaflets, handouts, and posters were used in teaching the television course. Over 300 different pieces of resource materials were used in conducting the course. One objective of the course was to acquaint pupils with many valuable fact-finding sources in the field of health education.

4. *The use of the psychological approach.* In order to encourage the best and the most modern teaching methods the television lessons were organized in a manner that encouraged the use of the psychological approach. Thus units were based on problems related to the needs and interests of the pupils. These problems had been determined locally for the most part when the first draft of the "Health Science" guide was developed in 1957. Both the receiving teachers and the studio teacher used the guide as a common source of information, and the television outlines were correlated with this instructional guide. Furthermore, pupils in the television classes were encouraged to identify their personal problems as they related to selected problem areas. Emphasis in the course was given to the solution of problems rather than to the storing up of information for possible use later.

5. *The basic outline in the preparation of each lesson.* Each telecast followed a basic format and was organized as a script. Although the parts of the format overlapped from time to time, depending on the exact composition of the lesson, each lesson consisted essentially of six distinct parts:

THE HOOK OR TEASER OPENING. The same opening, music, slide, and script were used on the health science television program each day. A theme entitled "Fancy Free" was selected because it sounded "healthy and bouncy" and because it was available in the library of cleared music for television. A special slide was prepared by the art department for the opening. The slide depicted two healthy, happy, and enthusiastic teenagers hurrying to go somewhere to have fun. (The same picture as appeared on the slide was used on the receiving teacher's study guide.) Accompanying the theme and slide was a basic script called an announcer's opening copy.

INTRODUCTION TO THE LESSON. The lesson for each day was introduced by the studio teacher. The way in which the lesson was introduced depended on the nature of the specific subject. One obvious reason for having the teaser opening and the introduction to the lesson was to obtain pupil interest. For example, in introducing "Nuisance Diseases," the studio teacher was busy "swatting flies," and on one first-aid lesson an "Emergency Squad Car" drove up and the studio teacher jumped out.

DEVELOPMENT OF THE LESSON. The largest block of time was devoted to the development of the lesson content. The real "stuff," the objectives of the lesson, was met during this portion of the lesson. Usually two to three basic ideas were presented and developed in some detail. For example, on one dental health lesson, the importance of safety practices in caring for our teeth, proper tooth-brushing to prevent decay, and diseases of the mouth were discussed. On another lesson on mental and emotional health, how emotions help you, how emotions harm you, and ways to aid your emotional development were discussed.

SUMMARY. This brief but important part of the lesson summarized the material which had been presented on the program. This was done for the purpose of clarification and for the purpose of emphasizing the important ideas. Also, the summary gave the listeners the feeling that the lesson was drawing to a close. Pupils were given time to take notes and frequently the summary statements appeared on a "crawl." For teacher reference, the summary remarks were included as a part of their daily outline.

SUGGESTED PUPIL ASSIGNMENTS. At first all pupil assignments were given over television. Later in the experiment only occasionally were pupil assignments suggested over television.

FUTURE PLANS. Usually, if time permitted, pupils were given a brief glimpse

of the next day's lesson. If there was to be no telecast, an announcement to that effect was made. Occasionally special evening telecasts or special school functions relating to health science were called to the attention of the pupils and the receiving teachers.

6. *The presentation of many types of pupil learning activities.* The best way to indicate the many types of pupil activities that were presented on the telecasts is simply to list some of them, such a list being self-explanatory:

collections
current events
debates
demonstrations
discussions
dramatizations and skits
problem solving
health vocabulary studies
interviews
keeping individual health records
keeping notebooks
lectures
making scrapbooks
oral and written committee and individual reports
panel discussions
health screening tests
simple experiments
community visitations
displays and exhibits
special projects
visitations by resource persons
quizzes
reviews
role-playing
reading assignments
style shows
pretests
unit tests
audio-visual activities

Since pupils profit by being exposed to a variety of learning experiences many types of learning experiences were planned for the telecasts.

7. *The participation of resource persons on the telecasts.* Numerous resource persons from the local community, the Ohio State University, and the Columbus Public Schools participated in the television program. A special effort was made to select highly qualified individuals and to familiarize these individuals with the television experiment. The role of the resource participant was not treated lightly and in all cases pre-planning was considered essential to a successful lesson. One very important rule was followed in relation to resource participants: not more than two adults were asked to appear on any one program. This rule did not apply to pupils. In fact, depending on the nature of the lesson, it was sometimes advantageous to have a group of pupils on the program. For example, in the unit "Making a Good Impression," one lesson was devoted to how to select the right clothes for the right occasion. On this particular program fifteen pupils participated in a style show. In still another lesson in the unit, "Safe and Effective Living," a group of nine pupils demonstrated first-aid carries.

Certain resource guests, such as the school dental hygienists, were asked to follow-up their television appearances by visiting receiving classrooms. This practice was well accepted by pupils.

8. *The use of audio-visual materials.* In addition to the kinds of art work prepared especially by the WOSU–TV art department, films and filmstrips were selected from local health sources. When time permitted, the studio teacher prepared film guides for the receiving teacher to use in pre- and post-television discussions. Certain selected films, such as "Hemo, the Magnificent" and "The Teens," were packed with material, and in these cases not only was a film guide provided the receiving teacher but an additional class period was scheduled for related class activities.

9. *Community visits made by television.* Several visits, one to the Ohio State University Dental Clinic, and another to Blacklick Metro-

politan Park, were filmed for the health science television lessons. In most cases, however, stills rather than films were made of local places of interest. These stills were far less expensive than a film, and the studio teacher had more opportunity to discuss them in detail as they appeared on the broadcast. Indirect visits by the use of a series of stills were made to a cafeteria, a meat-packing plant, a dairy, a laboratory, a sewage treatment plant, a water filtration and softening plant, and many other similar places. It was possible for the health science television classes to make far more visits into the community than could be made by regularly scheduled health science classes.

Time Required and Tasks Involved

In planning a single television lesson in its entirety, an estimated 18 hours was required. This sounds like an exorbitant amount of time to use in planning one twenty-minute television lesson, and it is certainly considerably more time than the "average" teacher can give to the planning of a single daily lesson. To justify the time required by the studio teacher in developing a typical television lesson, it is necessary to identify the major tasks involved in preparing a typical lesson and to indicate the time element required to complete each task. For a composite of this information see Table III on page 13.

Evaluation of the Health Science Television Lessons

The 150 television lessons were continually evaluated by pupils, teachers, principals, parents, and other professional and lay members of the community. Two of these groups, pupils in the television classes and receiving teachers, were asked to evaluate the television experiment in writing, the pupils by means of essays and the teachers by means of an evaluative check list.

TABLE III. TASKS AND TIME INVOLVED IN PLANNING A SINGLE TELEVISION LESSON

Time Required	Tasks Involved
1½ hours	*Individual Contacts* (with other television personnel, especially the curriculum coordinator, the school physician, the audio-visual coordinators and the university consultant; with resource persons who are to appear on the program)
8½ hours	*Developing and Writing the Script* (from the lesson objectives to the skeleton outline and from the outline to the detailed audio and video script; includes, for example, research readings, previewing and selecting audio-visual materials and preparing art requests)
3 hours	*Rehearsal* (at the administrative office of the Columbus Public Schools and at the television station WOSU-TV)
1½ hours	*Preparing and Organizing Materials* (for the receiving teachers' lesson outlines, supplementary printed and graphic materials, and general communications; for the pupils supplementary printed and graphic materials)
1½ hours	*Committee Work* (with television personnel and with resource participants)
1 hour	*Traveling* (to and from the studio for broadcasts, to and from the classrooms for visitation purposes and for program planning with pupils and teachers, and, to and from various places in the community in contacting resource persons)
1 hour	*Evaluation* (to evaluate the telecasts through such techniques as visitations, questionnaires, interviews, and pupil tests)

The Pupils' Evaluation

Generally speaking, the pupils' evaluation of the health science television experiment was highly favorable. A summary of their impressions and attitudes are revealed in the following statements:

Pupils—

seemed to associate pleasure with television and indicated that they paid more attention to the lesson in their television class than they did to the lessons in other classes.

claimed that they were able to see things in their television class that it was not possible to see in a non-television class.

mentioned that instruction by television gave them much needed experience in taking notes.

felt that their studio teacher was interesting and convincing and that he possessed a sense of humor.

believed that both their studio teacher and their receiving teacher had a thorough knowledge of health and that both played an important part in making the experiment a success.

received resource persons with enthusiasm; liked seeing their classmates on television and also enjoyed making personal appearances on television.

for the most part, grasped the content of the television classes without difficulty; liked best the following units of instruction: "Safe and Effective Living," "Appraising My Health," "Diseases and My Health," "Coping With Habit-Forming Drugs" and "Seeing and Hearing."

preferred a lesson summary.

seemed to receive tests by television quite well.

looked forward to the pre- and post-television discussion periods.

favored small classes.

The Receiving Teachers' Evaluation

Seventeen receiving teachers, representing twelve junior high schools, were participating in the health science experiment at the close of the school year. Each of these teachers completed an Evaluative Check List on the experiment which revealed these conclusions.

The time of telecasts, receiving class size, introduction of telecasts, development of telecasts, summary of telecasts, level of lesson planned for the pupils, number of visual materials and effectiveness of visual materials were satisfactory to the majority of the receiving teachers. Over half of the receiving teachers thought that there should be four telecasts per week, that the audio was either distinct or clear, that the video was clear, that the pacing was satisfactory, that the length of the telecast was satisfactory, that the amount of time for pupil participation before the telecast should be lengthened, that the amount of time for pupil participation after the telecast was adequate, that the pupil assignment should be made jointly by the studio teacher and the receiving teacher, that health science was more interestingly taught by television, and that more subjects should be taught by television.

Health Science Television Plans for the Coming School Year

The health science television lessons will be repeated during the 1959–1960 School year. The Ohio State University (WOSU–TV) and the Columbus Public Schools will receive a financial grant from the Ford Foundation to support the continuation of this research project.

BIBLIOGRAPHY

Baker, Mary, Joy Cauffman, and Carroll Smith. "A Study Guide for the Health Science Television Series." Unpublished curriculum guide, Columbus Public Schools, 1958–1959.

Board of Education, Columbus City School District. *Minutes of the Board of Education of the Columbus City School District.* Columbus: Columbus City Board of Education, June 17, 1958.

Garrison, Joy, and Others. "Health Science." Unpublished curriculum guide, Columbus Public Schools, 1957.

Miller, W. W., and Others. *Junior High School Agreements Chart.* Columbus: Columbus Public Schools, 1959.

Sheatsley, Dan. "Driver Education Television Course." *The Ohio High School Athlete,* 2: 111, February, 1959.

Wannemacher, H. W. "An appraisal of Selected Aspects of a Television Course in Driver Education of the Columbus, Ohio, Public Schools." Unpublished Master's thesis, the Ohio State University, 1959.

* * * * *

PALO ALTO'S SCHOOL DENTAL HEALTH PROGRAM

E. Pearl Hannah, D.D.S.
Palo Alto Public Schools

Basic Problems Relating to Public Understanding

By the time American children reach fifteen years of age, nine out of ten have suffered from decayed teeth. With so few people escaping this ravage it has literally become a modern day plague. This Twentieth Century affliction seems to mushroom up out of social influences associated with diet and family routine. It is spawned from the soil of prosperity where push button goodies tempt small pocket books and even smaller will powers at every corner of life. More than half of our children are reaching adulthood with inadequate dental care due in most instances to ignorance or inability of families to meet the costs.

History records other plagues throughout the centuries. Black Death of Medieval times was conquered through improved sanitation. Small pox, marking nine out of ten persons 200 years ago, was conquered through vaccination. Tuberculosis reaped a similar harvest a hundred years later. This, too, is being reduced in incidence with early detection and treatment.

A corollary can be drawn with our modern plague of decayed teeth. By uniting our courage and knowledge, this too, can be controlled. Its incidence can be accurately predicated from one generation to the next. We know such "fire" can start at two or three years of age. Unchecked, it will sweep through the mouths of nine out of ten children during their period of growth.

What, then, are we waiting for? What are the deterring factors to a more positive approach through general control measures? Let us look at some most frequently mentioned.

Cost—A large segment of American families find dental fees more than they can consistently manage for long range care when children are small because there are so many areas of demand. Non-paying clientele is also costly for private practice to absorb.

Insurance—There is little or no coverage for dental care, accident disability excepted, because these needs are so unpredictable.

Motivation—This disease is not dramatic like muscular dystrophy, cancer or heart disorders.

It is not contagious like polio, small pox or tuberculosis.

Moral values are not attached to cario-genic foods such as are fixed on cigarettes and alcohol. Coke vending machines and candy bar counters can usually be found around schools, churches and recreation centers; but shame unto a cigarette dispensing machine where young folk gather.

Organization and Objectives of the Program

Palo Alto Unified School District has been carrying on an active fight in this field for forty years. Shortly after World War I the school nurse brought to the attention of the Parent Teachers Association the need for dental care throughout the entire school student body.

The Parent Teachers Association, with the consent of the Board of Education and the support of the local dentist set up a small dental program specifically for its public school children. A part-time dentist was hired to examine the children annually and perform limited clinical treatment. Any enrolled pupil was eligible for this service at that time.

The program was but a skeleton of its present day stature. Equipment was of the meagerest in scope and quality; student enrollment was 700; the city's population was 10,000 and there were 10 dentists practicing in the town—none, however, in children's dentistry nor orthodontics.

Forty years slipped by.

Today the program is running full time with a staff of five including two dentists, a hygienist, an admittance secretary and a clerk. The student enrollment is over 14,000; population is 50,000; and there are 97 dentists practicing here. All dental specialties are represented.

From such modest beginnings the program has developed into a part of the school system along with other special school services such as speech, nursing, psychology, special education, etc.

Working relationships with private practice are most healthy. Dentists are included in policy making procedures that affect patient admittance to the school clinic for treatment as well as form notices sent to parents.

Private practice has come to realize that the clientele at the school clinic level relieves it of the burden of non-paying patients because they present the double hazard of referrals. Service at the school clinic expands the family buying power for dentistry. Parents can then more ably meet their own dental needs in private practice. For still lower economic brackets it puts the responsibility for dental care on the community as a whole.

Like all pioneering work, it has taken time and experience to shape the program as it is today. We are moving on an untracked waste-

land of dental neglect, professional confusion and socio-economic frustration. Through trial and error we learn what to do and what not to do in order to get the most far-reaching results with the limited personnel, limited cooperation and limited understanding from the public. These aims are:

1. To teach early controls of cariogenic foods and food habits so that reputable organizations, as well as individuals, will become semantically aware of what food chemistry is doing for the child.
2. To channel non-paying clientele into the school department so that both the patient and the dentist will get an equitable break. This prevents overloading a practice with families the public health worker finds in need. It spreads the general costs of such care over the entire community, where it should be, and affords a center whereby the social worker, low income families and youth groups can seek direct help.

Dental Health Services Provided by the School

Examination—With the opening of the fall term the hygienist assisted by the clerk begins examinations following a schedule set up before the previous school term closes. The schedule is determined by the economic range of school areas. For instance, areas with depressed economies present greater needs. Therefore, more clinical time should be available for pupils from these schools. They are placed at the top of the schedule for early examination in the school year.

Dental examinations are available to all elementary students and consume three quarters of the hygienist's time. The other quarter is spent doing prophylaxis at the school clinic; collecting and arranging source material for teachers and school nurses; giving classroom lessons on dental health upon invitation from the teacher.

Her equipment is simple and portable. Sharp explorers and clear mouth mirrors, steam sterilizer, cold sterilization solution, a large mirror and portable chair complete the armamentarium. The examinations are not compulsory, although students are expected to participate. They come to the examining room in small orderly groups. One by one they take their places in the examining chair. The condition of their mouths is charted on a permanent record card to indicate gross defects and general irregularities, if they exist. Each card is filed and used during the pupil's elementary school years. This affords comparative study on each individual card.

When visible defects are present a notice is mailed home urging that the child be referred to the family dentist or, in cases of need, to the school dental department for treatment.

Remedial Treatment—Palo Alto is the only school district that by community group action is seriously hacking away at the knotty problem of "What To Do About Unmet Dental Needs" for those "too rich to get it for nothing and too poor to pay for it."

When it is not possible to schedule students for private office care, they are directed to the services of the school dental clinic. Screening qualifications are kept flexible and relative to the general circumstances of each family without infringing on the pay load of private practice. Red tape is kept at a minimum. A nominal fee is charged for treatment. However, this charge is waived for those who do not qualify for Aid To Needy Children, yet are unable to pay even this modest sum. The service

offered is limited to amalgam and silicate fillings, minor extractions, soft tissue treatments, prophylaxis and space maintainers. Naturally no attempt is made to build up a large practice in children's dentistry. The sole objective of the program is to afford every elementary pupil in the public schools an opportunity for proper supervision during his dental growth and development regardless of circumstances that might prohibit his having a full complement of normal teeth in normal relationship when he reaches adulthood.

A by-product of his clinical experience is that he learns to appreciate, desire and plan good dental habits for himself and his future family.

Education—Along with the more formal classroom teaching of teeth, their names and functions, we reach into broader concepts of education where the laggard and "left-handed" sort of thinking of economically depressed groups becomes confused. Through personal experience we teach them to want good teeth, to want them enough to keep them in bright and shining order and thus reset their values in costs of dental care. We teach them to value time so they will keep their appointments. We teach them to follow instructions on home care. The need for this type of education has become increasingly important in recent years since disciplinary training is more relaxed in total education. In certain areas of living there must be self-imposed discipline or havoc results. Dental health is one of them.

This is the most difficult area we deal with in dental health education. It is also the most rewarding. Each year we bend our backs to this difficult and often disappointing task because self-discipline is the fiber of which a democratic commonwealth is made. We have rules for our patients that read as follows:

Your child will be dropped from our Dental Health Education Program for the year if:

1. He breaks an appointment without 24 hours notice.
2. He is not keeping his teeth clean and well brushed.
3. He is not cooperative in the dental chair.

These policies have brought very gratifying results in families with such delinquencies due to little or no personal disciplines. They may also condition some patients to become desirable clientele in private practice. When patients are dropped from the program for the remainder of the year they do their part with amazing satisfaction later. Justified praise from staff personnel often helps them to become satisfactory clientele. This is reward enough for our efforts.

One can do only so much with any patient. The rest has to come through the patient's own efforts. We are dealing with "the lame, the halt, and the blind" as far as dental care is concerned. Some families seem to have the reasoning maturity of third or fourth graders. Here is a specialized education that brings new concepts which can change life attitudes which in turn can help this group reach better goals in other areas of living.

What kinds of people participate in this program?

They come from many walks of life. Some families are more temporary in the program than others, depending on their ability to improve their circumstances. The following families illustrate various types and conditions we try to help each day.

Family A—Colored. There are five children and the mother. One girl is an unwed mother-to-be. The welfare department has allotted the family $212.00 per month. There will be additional allotment when the new baby arrives. The mother wants all her children to continue their education through high school. She plans for the unwed daughter to finish high school after the baby's birth. The children have improved their home hygiene and have become cooperative to work with. Their general attitude is more out-going.

Family B—Colored. Mother, father and five children. He is a laborer. His work is seasonal. He loses time during rainy weather. The last two children are twin boys who are six years younger than the three girls. The father makes $300.00 a month when he works. This additional medical cost made dental fees prohibitive. Their three daughters are very good students. Needless to say, this family is most satisfactory to work with.

Family C—White. Five children, a mother and father. One child is mentally retarded. She is next to the oldest. The father was making $800 per month when stricken with a heart ailment which necessitated giving up his job. During the interim of unemployment he has been recovering and trying to get into another line of work in his middle years. The three younger children and the mentally retarded girl have participated in our program during this period of economic stress.

Family D—White. Six children, a father and mother. They represent the typical young American family trying to better itself. The father is back in college finishing a much delayed education in geology. He makes $260 a month on a part time job which with scholarships enables him to continue his studies. The children are too young for the mother to augment the family fortunes with a job. Because a family of six boys makes renting difficult, they had to buy a home. Needless to say they are most grateful for the dental care this program affords them.

Family E—White. Here is another type of problem. The family has six children all under twelve years of age. The father and mother are maintaining a good home environment for the children. The father has a small business which brings in an adequate living for them under average circumstances. However, five of these children are in need of orthodontic treatment because they have inherited severe malocclusions. This type of dental treatment puts a crimp in most pocket books. Multiplied five times in a period of less than ten years, it becomes a crippling blow to their economy.

Summary—Here, then is the meaning of this program in terms of people; people whose per capita incomes are low; people whose buying power is weakened by circumstances that are immediate and many times beyond their control. Their dental needs are not met otherwise because;

1. Dental insurance plans are limited.
2. Social living in modern America is a hot bed of cario-genic nutrition, thereby creating a favorable environment for wide-spread incidence of caries in growing children.
3. Modern day living costs in California make long range dental care via private practice prohibitive for families with monthly net incomes of $100.00 or less per family member.

Here also, is a program with a possible two-fold benefit blessing both

the low income families and the dental profession. It cushions the cost of dental care for the one, thereby expanding the family budget to cover dental costs for parents. It relieves private practice of unrewarding clientele that cannot adequately meet its full obligation to the dentist.

* * * * *

A NEED FOR NUTRITION KNOWLEDGE

DOROTHY THROSSELL and JOHN MORRISON
Ohio Department of Health

Are we failing to teach our school children the facts about good nutrition? Results of a five year food habit study in four northwestern Ohio counties indicate that our children, though living in the midst of abundant food supplies, are nutritionally hungry.

For example, the study showed that out of 8086 children between the ages of 11 and 16, only 40% of the boys were getting recommended daily amounts of vitamin C. The girls did a little better, but there, too, only 50% of them were receiving recommended amounts of this important vitamin.

Why should this be true? One answer is that our school children just don't know what foods are needed to keep them healthy. A corollary is that our youngsters, equipped with a smattering of facts, are often misled by half-true ideas about nutrition.

Who, then, is responsible for their lack of knowledge? One cannot escape the conclusion that all of us who take part in the teaching of our youngsters must be held accountable.

That is not to say that our educators, nutritionists, and parents are *unconcerned* with our children's nutrition. The food habits study was accomplished only because teachers recognized the problem and asked for help in solving it.

A Matter of Food Habits

First to take up the problem was Erie County in 1952 where teachers from Perkins School wanted to know why children preferred certain school lunch foods over others. They wanted to know how they could teach their sixth grade students to like some of the valuable but neglected foods. They called upon the Ohio Department of Health's district nutrition consultant, who as part of a general nutrition program had conducted limited studies as far back as 1946. With her assistance, a study of the sixth grade was made. It showed that many of the children rejected certain foods simply because they had never eaten them and didn't know what they were.

Then, as now, Erie County was in the throes of a heavy population shuffle. The change from a predominantly agricultural to a semi-industrial milieu had brought in many people from other parts of the country. Many of their customs and habits differed in a number of ways from the established community pattern. Food habits were no exception.

A child from a southern state usually was not in the habit of eating

tomatoes or citrus foods, but he was well acquainted with such items as turnip tops or mustard greens. On the other hand, this was exotic fare for northwestern Ohio natives.

Using the information gathered by the study, the teachers made a special effort to familiarize the children with different kinds of foods. Once the children knew something about these foods, the problem was solved.

The Study Extended

The study also revealed that, in many ways, these children were ignorant of basic nutrition principles. Was this true of other grades?

At the request of the Board of Education, the study was extended to include children in the sixth through the tenth grades. The results showed that tenth graders had poorer food habits than the sixth graders.

Just about that time, an article appeared in Reader's Digest supporting these results. Titled, "Our Starving Teenagers," the article pointed out that most of our teenagers are suffering from some degree of malnutrition. By this time, word of the study had circulated around neighboring counties. Educators in Huron, Sandusky, and Ottawa counties had read the Reader's Digest article and were eager to learn the nutrition level of their students.

The Nutrition Consultant then gave direction in conducting surveys in 85 schools and found generally the same results as in Erie County. Our school children were not meeting the daily nutritional allowances as recommended by such authorities as the National Research Council. (See Chart I).

Some Other Facts

- Generally, in the lower grades, boys neglected nutrition more than girls. But in the ninth and tenth grades, the boys' nutrition level picked up in some areas. (See Charts II and III)
- Boys ate more protein foods such as milk, meat, fish, and eggs. Girls outdistanced boys on vitamin content foods such as vegetables and fruit. But, by the tenth grade, the boys were eating more vitamin C rich foods than before, while the girls were eating less.
- In the higher grades, milk consumption dropped for both boys and girls. At the same time the use of soft drinks, candy, and other sweets increased.

The Reasons Why

What are the reasons for these differences? Some conclusions can be drawn when we consider the children's prevalent attitudes and level of nutrition knowledge. For example, the reason why the boys' nutrition level increases in the higher grades can be traced to an awakening interest in athletics. The influence of the coach and the physical education instructor is apparent in the matter of increased vitamin C intake. The boy is told to drink orange juice as part of his training program. Therefore, the vitamin C level in the tenth grade increases.

Although the influence of athletics has it salutary effect, it sometimes encourages certain deficiencies. When the coach recommends soft drinks as an energy pick-up before a game, he doesn't mean that he recommends it as a general substitute for milk. But the teenager is prone to mis-

interpret it in that way. At that age, milk is too often dismissed as "baby food," and the teenager welcomes any excuse to scratch it from his diet. There is also a misconception among youthful athletes that milk is "bad for the wind." This might be true if taken in large quantities just before a contest, but too often the boy is not made to understand that the coach is not generally condemning the use of milk.

From the standpoint of the girls, they have heard somewhere that milk and bread are fattening. At this age, girls seem most concerned with weight control, so that many of their food choices are determined by this attitude. In addition, they welcome the opportunity to substitute "grown-up" beverages such as coffee and soft drinks.

The 24 Hour Diet Recall

The problem of establishing good nutrition habits, then, is a matter of education. It means telling the complete story. It means the combatting of entirely false ideas. It means a strong effort to change attitudes.

How can this be done by the resourceful teacher? The first step is to find out the general nutrition level of the students. Any teacher, with some initial assistance, can conduct a food habits study in the classroom.

Here's how it was done in the schools of Erie, Huron, Sandusky and Ottawa Counties:

A 24 hour diet recall form was prepared. The children were asked to remember what foods they ate at breakfast, at noon, and the evening of the day before. Also, they were asked to write down what they ate between these meals. Filling out this form usually took about 20 minutes. Names did not appear. The recall sheets were gathered up and each was checked to determine the amounts of foods consumed from each of six basic food groups. These amounts were indicated in three levels—"adequate," "some," and "none." Results for grades six through ten were tabulated by grade and then totaled. A chart, report, and recommendation sheet were prepared and given to school authorities. The nutrition consultant was available to discuss the study with school superintendents, PTA's or community groups.

This is not essentially a scientific procedure, nor is it meant to be. It's an educational device that is successful in focusing attention upon the need for better nutrition habits. It directly involves the children, teachers, school officials, community groups and parents, and it does produce changes in nutrition habits.

What Has Been Done

Here are some of the ways that good nutrition has been taught in the schools that have taken part in the survey:

- Correct facts about nutrition have been incorporated into the schools' general course of studies. Special supplementary materials have been prepared to accompany standard reading texts. Quizzes have been prepared. Definite experimental activities have been devised to demonstrate nutrition principles. Leaflets and booklets dealing with specific nutrition problems have been distributed. These materials are used every day as part of routine classroom assignments.
- Changes have been made in school lunch programs so that to some extent they serve as laboratories for nutrition teaching.

• Classroom teaching of nutrition has increased. For example, one elementary teacher explains each food item on the school lunch program to the children just before they leave class to go to the noon meal.
• Results of the studies have been published in the community so that parents and groups have come to realize the importance of better nutrition teaching and have cooperated in up-grading the schools' nutrition programs.

What Educators Can Do

We have listed some things that are currently being done. Every school could raise its children's level of nutrition knowledge by applying these suggestions. But there are other things that can be done.
• We need to teach basic nutrition facts to teachers in college preparatory courses. This is especially true in the field of physical education.
• The athletic coach's influence cannot be minimized, and we should do all that we can to help him make best use of his opportunities for nutrition teaching.
• We need to combat false and misleading advertising, and the school is a good place to do it.
• Finally, we need to increase our efforts toward including the community in our nutrition education program.

The answer to the question raised at the beginning of this discussion is "Yes, we *are* failing to teach our children the facts about good nutrition." But we can qualify that statement immediately by saying, "We are aware of the problem and are beginning to solve it."

CHART I

COMPARISON OF TEENAGE BOYS' AND GIRLS' HABITS

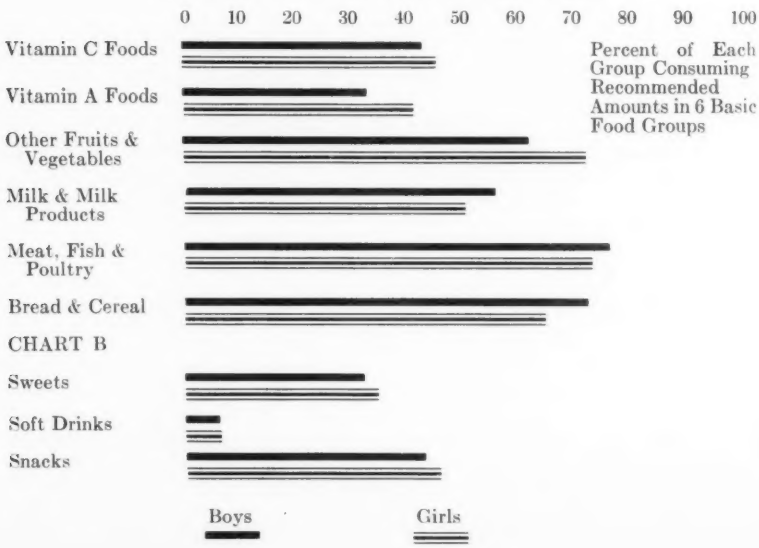


CHART II

COMPARISON OF TEENAGE BOYS' FOOD HABITS

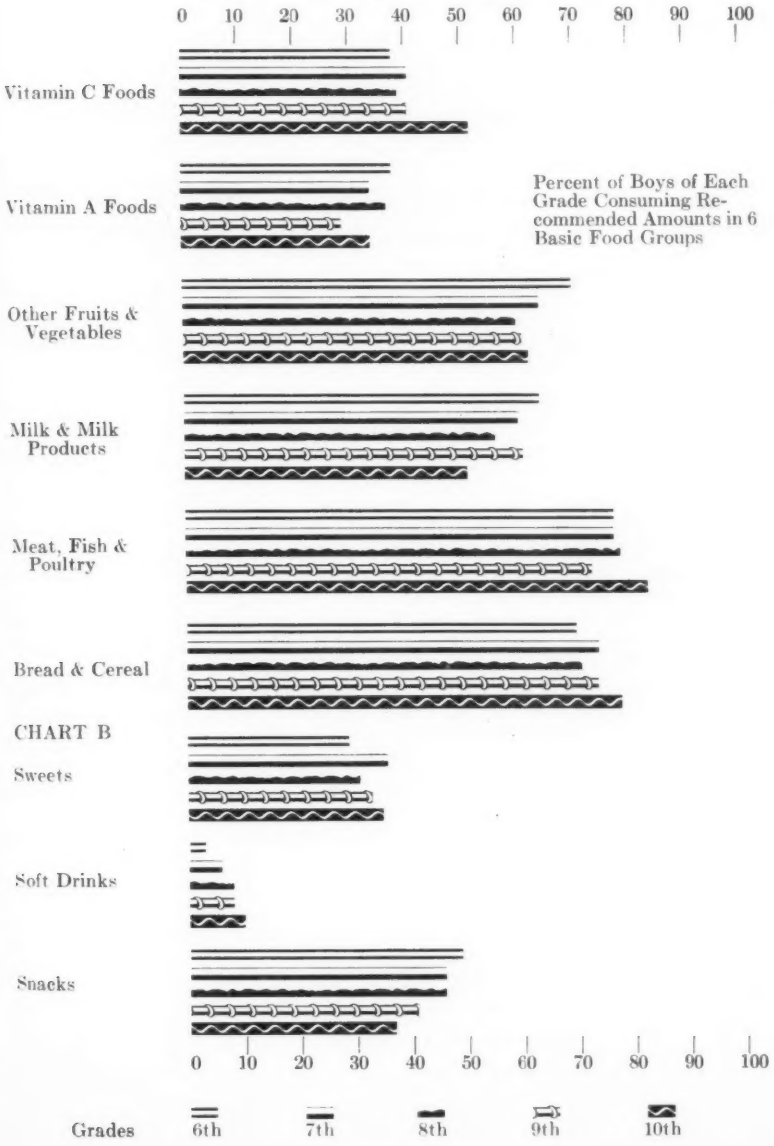
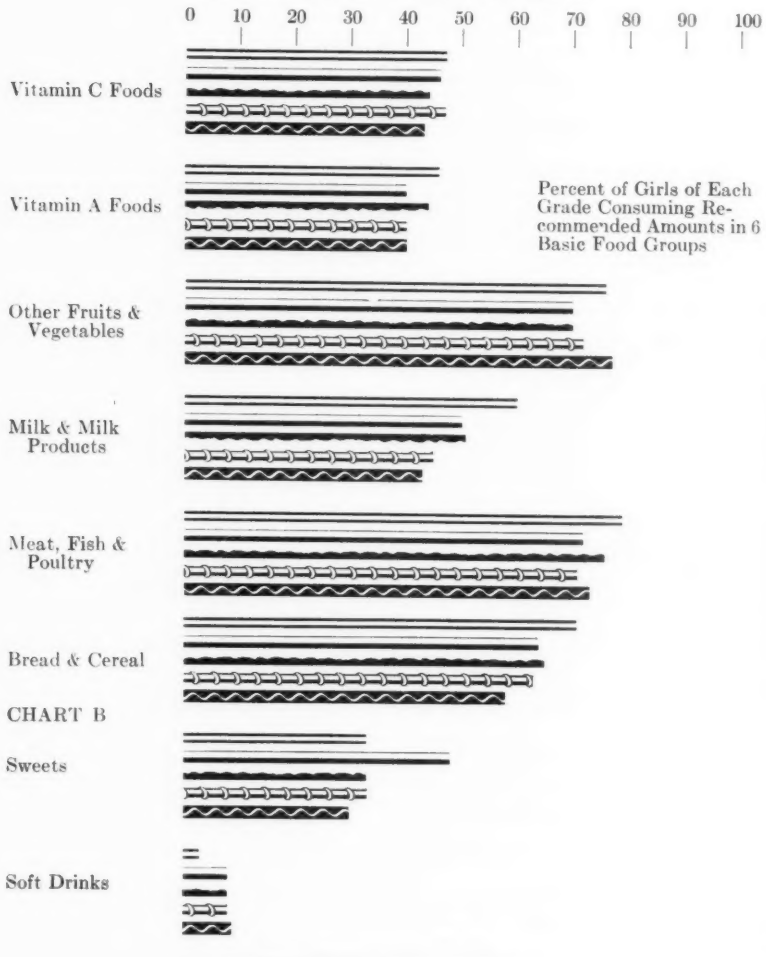


CHART III

COMPARISON OF TEENAGE GIRLS' FOOD HABITS



RESEARCH OF INTEREST

WESLEY M. STATON, ED. D.
Colorado State College
Chairman, Research Council, ASHA

Abstracts of selected research and reviews of research in school health education, health services and guidance, healthful school living, and health science . . .

Council on Drugs: "Blood Dyscrasias Associated with Chloramphenicol (Chloromycetin) Therapy." *Journal of the American Medical Association* 172: 2044 (April 30) 1960.

This official report of the AMA's Council on Drugs reviews the serious problem of possible toxic effects of chloramphenicol on the blood-forming organs of sensitive persons. The Council takes the position that the relationship between aplastic anemia—often fatal—and chloromycetin treatment is not "merely a chance association." Recognizing the potent effectiveness of the drug in treating certain resistant and serious infections, the Council nevertheless warns that "there is no longer a reasonable doubt that chloramphenicol may cause aplastic anemia." The Subcommittee on Blood Dyscrasias of the Council's Committee on Research goes on to say that "periodic blood cell counts may be of some help; however, they cannot be relied on to detect signs of marrow toxicity sufficiently early so that chloramphenicol administration can be discontinued before an irreversible aplastic anemia develops."

The Council deplores the indiscriminate use of the antibiotic for such conditions as upper respiratory infections, including the common cold, bronchial infections, asthma, sore throat and tonsillitis, ear infections, and other comparatively minor conditions. The Council's Registry on Blood Dyscrasias has received reports that chloromycetin has been improperly used in these and other infections.

The report concludes by urging that "judicious use of the drug must be the rule, and it should not be used prophylactically, in trivial infections, or in infections in which other, less dangerous antibiotics may be used effectively."

* * * * *

Duffner, Gerald J.: "Medical Problems Involved in Underwater Compression and Decompression." *Clinical Symposia* 10:99 (July-Aug.) 1958.

Skin diving with self-contained underwater breathing apparatus (scuba) has rapidly become one of the nation's most popular individual sports. The growing interest in scuba diving—and the medical problems related to it—have significant implications for both physicians and health educators.

Because the equipment is relatively inexpensive, and because it can be used with little or no training, amateur "frogmen" in increasing numbers expose themselves to the dangers of America's coastal and inland waters.

Most of the medical problems result from the difficulty in controlling the depth and duration of the dive, the rate of ascent, and from the insidious reduction of mental efficiency and judgment at greater depths.

Captain Duffner of the Navy's Medical Corps discusses problems of increasing pressure during descent. Pressure differentials may cause middle ear damage if there is blockage of the eustachian tube, as during an upper respiratory infection. The vacuum-like effect of pressure variances can also cause sinus pain when blockage exists or severe toothache where a tiny air pocket occurs beneath a filling, inlay, or dental cap. Generalized pressure, or squeeze, can produce petechial hemorrhages of the skin and extravasation of blood into the conjunctivae in areas beneath the face mask. Body welts may also occur from the same cause, particularly when a watertight, or "dry," suit is worn.

The two ever-present problems when under water are asphyxia and drowning. Asphyxia can occur if carbon dioxide is not properly eliminated when using "closed-circuit" devices. Drowning is a hazard of particular danger to the scuba diver swimming alone.

Unique "on-the-bottom" problems are nitrogen narcosis and oxygen poisoning. In nitrogen narcosis cerebral disturbances are produced by excessive amounts of dissolved nitrogen in blood and tissues. The alcohol-like effect increases with depth. The author describes "martini's rule" as follows: "at 100 feet, the effect of nitrogen is the same as produced by one martini on an empty stomach. At 200 feet, the effect is similar to that of two or three martinis; at 300 feet, four martinis; at 400 feet, too many martinis!"

Oxygen poisoning depends chiefly on two factors—depth and duration of exposure. Signs and symptoms include tingling of fingers and toes, visual disturbances, acoustic hallucinations, abnormal sensations, confusion, muscle twitching, unpleasant respiratory sensations, nausea, vertigo, lip twitching, and—finally—epileptiform convulsion. Any, all, or none of these symptoms may appear before onset of convulsion. Scuba divers should surface at the first occurrence of any symptom. To help prevent oxygen poisoning only compressed air—never oxygen—should be used in the tank.

In ascent, with accompanying decompression, two primary problems exist: expansion of air in lungs and escape of dissolved nitrogen from blood and other tissues. Alveolar rupture can produce mediastinal emphysema or—more seriously—cerebral air embolism, the latter frequently causing death. Divers must ignore the natural impulse to hold the breath and, instead, steadily exhale during any rapid ascent.

Depth and duration of submersion, coupled with speed of ascent affect the incidence of decompression sickness, or "the bends." Submersion to depths of 30 feet is unlikely to cause decompression sickness even in long periods of submersion. However, beyond 60 feet there is a marked decrease in the duration of submersion necessary to produce "the bends." Obviously, slow ascent is imperative when the diver has remained at depths below 30 feet for more than just a few minutes. Decompression in a special chamber is the only method of relieving the pains of decompression sickness, though breathing pure oxygen may be helpful in the absence of a decompression chamber.

* * * * *

Grulee, Clifford G., Jr.: "Pre- and Postnatal Irradiation Hazards for Infants and Children." *Rocky Mountain Medical Journal* 57: 35 (April) 1960.

This excellent review of research on radiation and child health indicates that injudicious use of x-ray can produce fetal anomalies, leukemias, sarcomas, thyroid cancers, and growth arrests.

Estimates indicate that background radiation contributes a cumulative dose of between 3.1 r and 4.3 r over a 30-year period. Atomic explosions from 1945 to 1955 added less than 0.1 r, or a dosage rate of 0.001 r per person per year in the United States.

Steadily increasing use of radiation in medical diagnosis and treatment has posed new problems for physicians. Damaging effects of radiation may be either biologic (somatic) or genetic; that is, harmful results may occur in the individual or in his offspring.

Research has rather dramatically pointed up the possible dangers of abdominal irradiation of the mother during pregnancy. Statistical evidence produced by two studies demonstrated that cancer and leukemias occur more often among children whose mothers were exposed to x-ray during pregnancy. Dr. Grulee urges extreme caution in using abdominal irradiation in any pregnant woman. X-ray for diagnosis or treatment should be utilized "most conservatively" in infancy and childhood. Physicians are advised to use care in the technical details, especially shielding of the patient's body outside the target area, and to keep dosages within tolerance limits of the most susceptible population groups.

Major problems: (1) educating the public on the potential hazards of radiation without, at the same time, creating undesirable anxieties or midunderstandings; (2) improving the skill of x-ray technicians; (3) putting new technical refinements into practice as soon as possible; and (4) developing a better understanding of x-ray by the average practicing physician.

* * * * *

Louisville Public Schools: "Our Children in Traffic." (A Study from the Accident Reports, Louisville Public Schools, 1958–59) Louisville, Kentucky, 1960.

About one out of eight accidents involving children in Louisville's schools during 1958–59 was a traffic accident. There were no fatalities during this school year; however, the report states, "there were . . . 349 potentials because each accident is a potential fatality."

Some major findings of the survey:

(1) Traffic accidents result in almost twice the amount of time lost per accident when compared to other types.

(2) More than four times as many traffic accidents occur at "other times" than when pupils are en route to or from school.

(3) Traffic accidents at "other times" are generally far more serious than those occurring en route to or from school.

(4) En route to or from school many more boys than girls were injured in pedestrian and bicycle accidents. Girls showed a five times higher rate for "other type motor vehicle accidents."

(5) Traffic accidents "at other times" occurred more often among boys than girls.

(6) Accident reports revealed that pupils were usually guilty of

unsafe actions when these accidents happened: "crossing mid-block, between parked cars; against lights; walking on or across expressways; chasing each other; dashing into the street to retrieve balls and dogs; failure to watch for machines coming out of alleys; riding two on a bike; and crossing unprotected intersections (particularly true when coming to school) are some of the causes."

* * * * *

McKee, Wallace P. and Robert E. Bolinger: "Caloric Expenditure of Normal and Obese Subjects During Standard Work Test." *Journal of Applied Physiology* 15: 197 (March) 1960.

Twenty-five normal and 19 obese subjects were tested for energy expenditure at rest (basal state) and during a standard work test.

Energy expenditure of both male and female obese persons was greater than that of nonobese subjects both at rest and during work. It was found that this higher caloric expenditure during work can be ascribed to the greater basal expenditure of the obese person rather than to increased energy required to perform the activity.

The findings of this study appear to conflict with several other reports in the literature which indicated that subnormal expenditure of energy and/or greater efficiency in converting chemical to mechanical energy may contribute—along with overeating—to obesity.

* * * * *

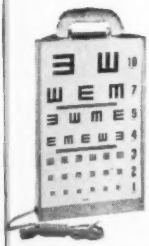
Moore, Virginia D. and James H. Humphrey: "Grade Placement of Health Concepts in the Elementary School Curriculum." (unpublished report presented at the meeting of the Research Council, American School Health Association, Atlantic City, New Jersey, October 19, 1959.

The researchers analyzed a number of the available elementary-school health textbook series in an attempt to identify important health concepts by grade level. The series studied had copyright dates ranging from 1954 to 1959. In addition to textbook analysis, teachers' manuals, teaching aids, and descriptive literature were also reviewed. Ten categories were arbitrarily determined to indicate the scope of content from kindergarten through the sixth grade. Three major areas were concerned with the basic needs of the human organism: (1) food and nutrition; (2) exercise; and (3) sleep, rest, and relaxation. Seven secondary categories were related to the adjustment of the organism to its environment: (1) safety; (2) first aid; (3) stimulants; (4) clothing; (5) the body—its structure, function, and care; (6) health services; and (7) mental, social, and emotional health.

Generalized findings are presented for three of the 10 categories: food and nutrition; sleep, rest, and relaxation; and health services.

The reporters concluded that: (1) "the placement of concepts as indicated in the books analyzed shows a relatively high degree of compatibility with other criteria for use of grade placement of health learning experiences;" (2) there is "fairly substantial agreement among the books as far as the grade placement of health concepts is concerned;" and (3) various kinds of content were often used to develop the same concepts.

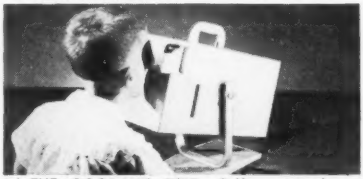
* * * * *



1. THE GOOD-LITE SNELLEN ILLUMINATED TEST CHARTS are available in reflected or transilluminated models. Six different Snellen cards are available. Convenient screening masks eliminate memorization.

2. THE HYPEROPIA OR FAR-SIGHTED TEST. This is done using your existing Good-Lite chart with the addition of plus lenses in a frame. Plus lenses are available in +1.00, +1.25, +1.50, +1.75, +2.00, +2.25.

3. MUSCLE TEST, available in two types — Both suited for kindregarten through 12th grade. Each with 2 referral standards.



(a) THE GOOD-LITE TEST — Self contained, requires no dark room or special set up. Alternate vertical prism, makes subject see two squares of such size that they do not touch, if muscle imbalance is excessive. Two sizes furnished.

(b) THE ALLIED MUSCLE TEST — With red-green glasses. The patient demonstrates to the examiner how far his muscles deviate from normal.

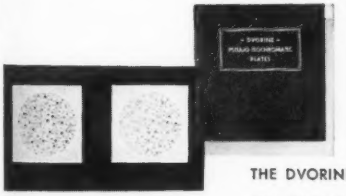
4. THE DEPTH-PERCEPTION TEST. This test is simply done with a pair of polaroid glasses and the third dimension picture of a fly.

5. THE NEAR-POINT TEST. Choice of two.

(a) The Adult Near-point cards, with letters.

(b) The Children's "E" plastic dial, rotates one letter at a time.

6. COLOR TESTS. Choice of three.



THE DVORINE

THE ISHIHARA

A-O TEST

Only GOOD-LITE offers you a 6 POINT VISUAL SCREENING PROGRAM . . .

The above is a list of the equipment needed to do a complete VISUAL SCREENING PROGRAM. The nurse and her vision consultant can arrange a program to suit their own needs, using as much or as little equipment as desired and adjusting the number of referrals to any level. The rigidity of standards in a "package deal" are avoided. Good-Lite allows you the flexibility of purchasing just what you need for your own testing program. With the entire Good-Lite testing program, several children can be tested at the same time in various phases with various pieces of equipment.

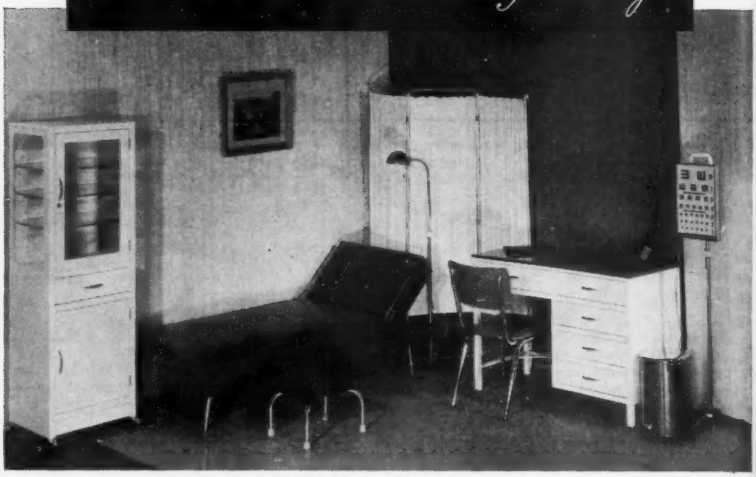
Write today for the free illustrated catalog and price list of Good-Lite's screening equipment and the free booklet "Visual Screening for Schools."

WRITE TO:

GOOD-LITE MANUFACTURING COMPANY

7424 WEST MADISON STREET • FOREST PARK, ILLINOIS

The ultimate in school health furnishings

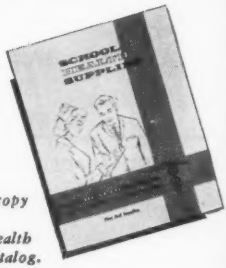


SCHOOL HEALTH SUPPLY CO.

7426 Madison Street, Forest Park, Illinois

Now you can buy direct from the manufacturer of a complete line of school health furnishings and SAVE! Designed specifically with the needs of the school nurse in mind . . . you can be sure of quality construction and long lasting values.

Send coupon for your personal copy of the School Health Supply catalog.



Please ship me the following items I have checked contained in your No. 800 suite:

☐ S-800	Chromium adjustable examining light	$ 14.75
☐ S-801	Single door instrument cabinet in jade green, white or ivory	$145.00
☐ S-802	Nurse's desk — stainless steel top in jade green, white or ivory	$135.00
☐ S-804	3 panel aluminum screen, Vinyl, 67" x 60", white or green	$ 34.50
☐ S-805	Palmer recovery couch with tough U.S. Naugahyde covering and adjustable finger-tip dual control back. In white, crimson, avacado, ginger brown, blue, grey, black, sandlewood and coral	$135.00
☐ S-810	Good-Lite Model A eye chart complete with standard 2 cards	$ 46.50
☐ S-816	Detecto scale balance beam (not shown)	$ 65.00

☐ Please send the complete School Health Catalog.

Name_____

School_____

Address_____

City_____ Zone_____ State_____